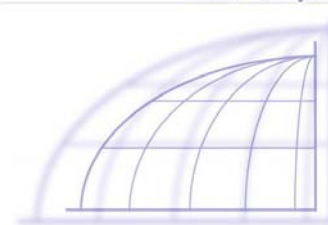


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Section B-5*



R-7: Systematic Exploratory Behavior

A good problem solver must have an organized approach to collect information to solve a task. We refer to this as systematic exploratory behavior. This knowledge construction function enables the learner to gather information in a methodical, organized and efficient way. A student who repeatedly seeks to fit oversized pegs into smaller holes may simply lack strategies for the systematic exploration of the pegs and holes to identify their relevant properties. A student who rushes through a task gathering only bits of information may just not understand how to think about approaching a task in a more systematic way. The appearance of impulsivity may on closer inspection point to a need to develop this knowledge construction functions.

Throughout your teaching encourage your students to take time to look and listen carefully before beginning a task. It is important to show or clarify for the student how to determine what information is needed to successfully complete a task, that is, what information is relevant for any particular task. For example, with a peg sorting task, you can help to organize the student's approach to looking at the pegs and the holes in order to identify their individual characteristics and to determine which of these might be relevant for a particular objective. "Let's see now, what do you have to do here?" (A question to focus the child to get her to think before she begins). Next, you can guide the child to look at and feel the various differences in sizes of the pegs and then guide the child to look at and explore the different sizes of the holes. "Do you think that a peg must match up with the same size hole?", "Why?" Help the student to discover that it is the size of the peg and the hole that is relevant in this task and not the color of the peg. "Why don't you start with the first hole and look at its size and try to find the peg that will match its fit." Once the student has found the match and filled the first hole, guide her to the second hole and let her discover which peg fits and continue the process, guiding the

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student only when it is necessary to do so. As soon as the student understands the idea and can do it on her own, allow her to discover her own mastery. By mediating how to go about and looking carefully at a task before beginning it, you will help your students to develop good exploratory behavior.

Attention problems are often confused with unsystematic exploratory behavior as both can yield piecemeal and haphazard approaches to tasks. Yet what at the surface looks alike is due to different problems at the source: Attention problems arise because of a difficulty holding on to *something*. Unsystematic exploratory behavior arises because the *something* isn't there. What is the something that needs to be there? The something is strategies. Exploring systematically requires that starting points are established and that a mental note, if nothing else, be pinned to them to avoid repeatedly covering the same ground. Exploring systematically requires a thorough and orderly way of progressing from one part of a task to another and a way of knowing when you are done. In the absence of systematic exploratory behavior a student will move helter-skelter from one part of a task to another and, often, back again. Irrelevant information is easily registered while important information is easily left out. It is difficult to operate correctly on poor information: Wrong information going in usually means a wrong answer going out.

To develop this knowledge construction function engage your students in learning events and discussions that focus upon the development and use of systematic ways of collecting information. Together with your students create activities within your curriculum, your classroom and school environment that enable them to recognize systematic from disorganized approaches to the collection of information. Have them use both types of strategies so they can compare and discuss the results.

One way to heighten the awareness of systematic exploratory behavior is to create situations where the use of one of the senses is removed. For example, have students explore objects in a sandbox or bag using only the sense of touch. Under the sand or without looking in the bag have them pick an object to explore. Afterwards have them draw and make a description of the object. Then display the previously hidden objects and see if students can identify the one they explored. Have them compare their drawing or description with the object. Use this experience to discuss how each of our senses can be used to explore systematically.

For a systematic data collection project the students may decide, for example, to determine the frequency of different hair colors in the

school and to produce a graph that shows the results. What would be a systematic way to collect this information? What would be a disorganized way to do so? For a systematic way, the data collectors might search for a point that everyone passes by in the morning and use that point to collect their data. For an unsystematic way they might observe in the hallways during recess.

As students develop their understanding of this function along with their skill in applying it encourage them to challenge themselves with situations that call for increasingly complex systematic exploratory strategies. Is a systematic strategy important to conduct elections? What kind of system might we set up if we had to conduct an election in our classroom or school? Is a systematic strategy important to discover how concerned people are about a problem in their community? What kind of systematic strategy might we come up with if we wanted to determine how concerned students are about a problem in the school? The use of systematic exploratory strategies is one of the defining characteristics of science. If we use a systematic exploratory strategy we begin to think and work like scientists.

Guide your students to the discovery that they can regulate when and how to apply systematic exploratory strategies. Once they understand about this knowledge construction function it becomes a brain tool that they can use at will. In other words students can increase or decrease the degree of systematic exploratory behavior to fit the needs and characteristics of the situations they are in.